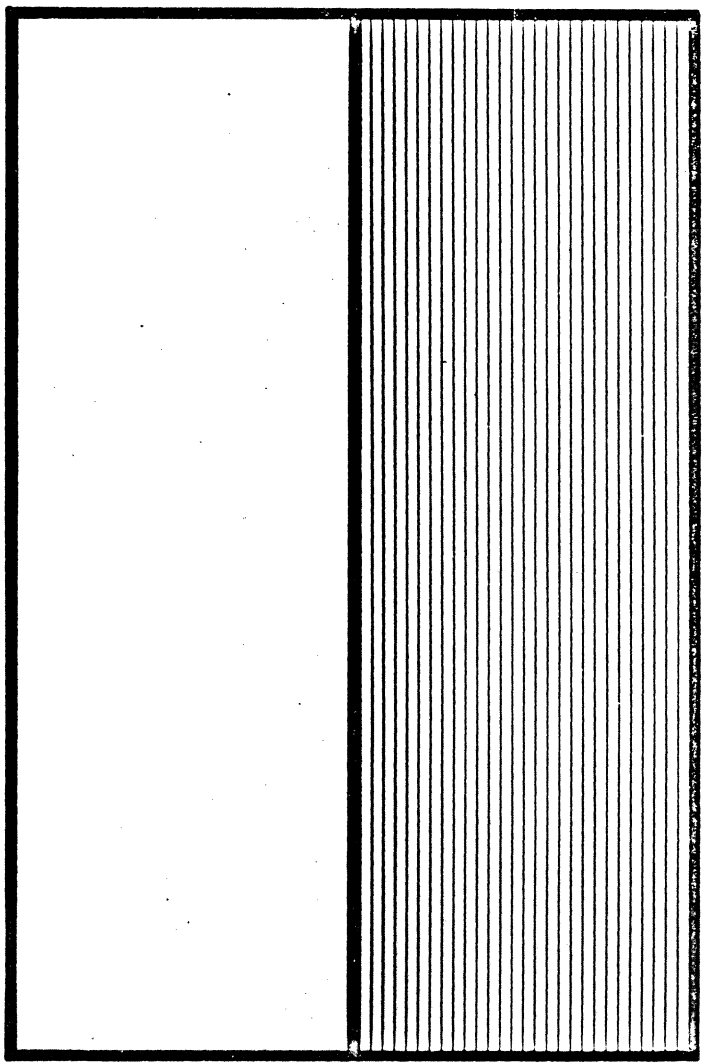
SPERRY RAND

4091716

UNIVAC 9400 SYSTEM

PROGRAM DESCRIPTION DRAWING



CUSTOMER ENGINEERING

SPERRY RAND UNIVAC

DRAWING NO. 4091716

REVISION -

CUSTOMER ENGINEERING
PRODUCT DIAGNOSTIC SOFTWARE

9400 - 5024/8424 or 8425 Disc Dual Channel Test D2140

	SIGNATURE	TITLE	DATE
APPROVAL			
APPROVAL			
APPROVAL			
APPROVAL			

REVISION STATISTICS RECORD

4091716

DWG REV	MSTR REV	RELEASE DATE	DESIGNER NAME	EIR NUMBER	FCO NUMBER
-	N		PDS Phila., Pa.	C12607	

REVISION DESCRIPTION RECORD

REV	DESCRIPTION
-	Release to 9400 Test Library

TABLE OF CONTENTS

SECTION		PAGE
1.	INTRODUCTION	5
	1.1 Purpose	5
	1.2 Major Objectives	5
	1.3 Equipment Configurations	5
	1.4 Associated Software	5
	1.5 Reference Documents	5
2.	FUNCTIONAL DESCRIPTION	6
	2.1 General Organization	6.
	2.2 Program Description	6
3.	OPERATING PROCEDURES	7
	3.1 Initialization	7
	3.2 Test Program Parameters	8
	3.3 Test Program Messages	8
4.	SUPPLEMENTARY DATA	8
	4.1 Supplementary Software Information	8
	4.2 Supplementary Hardware Information	8

1. INTRODUCTION

1.1 Purpose. This document describes a 9400 Maintenance test program for the 5024/8424 of 25 Subsystem.

1.2 Major Objectives. The objective of this test program is to perform a test of the 5024/8424 or 25 Subsystem. Test organization and operator options are intended to satisfy the needs of Design, Quality Control and Field Engineering personnel in checkout, acceptance and maintenance activities.

1.3 Equipment Configurations. All equipment configurations must be connected to a Selector I-O channel of the 9400 Processor. This test will operate the following equipment configuration:

- Disc File Control - Type 5024
- Disc Drive - Type 8424 or 25
- Disc Pack Assembly - Type F12 14-01

1.4 Associated Software. This program has DSKH included as an integral part of the program. This is the standard disc handler routine used by all Disc Maintenance test programs. It is the interface between the program and MCR, which performs program load, parameterization, execution, deletion, I-O handling, and message handling.

1.5 Reference Documents

DRAWING	DESCRIPTION
S70040	UNIVAC 9400 Processor, Type 3019-00 and -01.
—	UNIVAC 9400 Dual I-O Selector Channel, Type XXXX-00 and -01.
P10076	Disc File Control, Type 5024. 8424 or 25
4091622	Maintenance Control Routine.
4091623	Parameter and Message Routines.
4091670	5024/8414 Disc Program Handler.

2.2.4 Continued

Method. A chain ending with a Write Count-Key-Data, is executed. Normal ending status is checked, and then a second command is issued immediately. The control unit responds with control unit end.

2.2.5 Test 5 (Contingency Connection Caused by Unit Check)

Objective. This test determines that when unit check status is presented over a given channel, any command to the second channel results in a busy condition, and that the channel remains busy until a command is issued that results in normal ending status on the first channel.

Method. A chain that results in invalid sequence is issued over the first channel. Unit check is presented, and then a command is issued to the second channel. The second channel remains busy until a valid command is issued to the first. Then two interrupts are presented, the first with normal ending status, and the second with control unit end.

2.2.6 Test 6 (Attention Status Test)

Objective. This test determines that attention status is received when a disc drive is turned on.

Method. A typewriter message is presented that tells the user to turn a given disc drive off and on. When this is done, normal attention interrupts are received from both channels. If either channel is off-line to the control unit, no interrupt will occur, and the program will wait for interrupts from both channels.

2.2.7 Test 7 (Data Test)

Objective. This test determines that data can be written onto and read from a disc through both selector channels.

Method. A 256-byte record is written and read on head Ø of the first track in the test area, and the process is repeated on the other channel. Data read is compared to that written, and an error message shows any discrepancies.

3. OPERATING PROCEDURES

The disc handler routine DSKH is used as a standard interface between the program and MCR. All operating procedures described in the DSKH documentation hold equally well for this program.

3.1 Initialization. See DSKH documentation. The program is called by typing in the name D2140.

2. FUNCTIONAL DESCRIPTION

2.1 General Organization. This program is a test of certain functions of a 5024/8424 disc subsystem operating through both selector channels of a 8400 comp. First, the proper functioning of the Sense Reserve and Sense Release commands in a dual-channel environment is checked. Then the invalid sequences of Set File Mask-Sen Reserve and Set File Mask-Sense Release are tested. The proper setting of control unit end status is tested, and the contingency connection of the control unit to a channel having just presented unit check status is checked. It is then ascertained that attention status can be received over both channels from a given disc file control. Finally, a read-write test on both channels is performed. All tests begin with a No-Operation and a Test I-O to each channel.

2.2 Program Description

2.2.1 Test 1 (Group Test)

Objective. The objective of test 1 is to enable several other tests to be internally selected simply by entering the test. Test 1 selects tests 2 through 7

Method. The program places bits into the parameter location which tells DSKH which tests to enter.

2.2.2 Test 2 (Sense Reserve-Sense Release)

Objective. This test determines that the control unit can be reserved for a given channel, and that the Sense Release command allows subsequent commands to both channels.

Method. A Sense Reserve is issued to a given channel. Then a Read Home Address is issued to the same channel and to the other channel. The control unit responds with control unit busy. Then a Sense Release is issued. Two interrupts are received from the first channel, the first with normal end status, and the second with control unit end.

2.2.3 Test 3 (Set File Mask-Sense Reserve)

Objective. This test determines that invalid sequence conditions are received when a Sense Reserve or Sense Release is chained to a Set File Mask.

Method. The above chains are issued and unit check status is set and invalid command and invalid sequence bits are found in sense bytes Ø and 1.

2.2.4 Test 4 (Control Unit End Test)

Objective. This test determines that control unit end status is received when a second command follows a format write before index mark is reached.

3.2 Test Program Parameters. The setting of test program parameters is described in Document 4091702. For the most part, the operator can refer to this document. However, caution must be exercised in selecting device options. For test 6, any device selected for the first channel must also be selected for the second channel, else spurious error messages will occur. For test 7, if it is desired to interlace commands to two devices, only one device must be selected per channel.

3.3 Test Program Messages. The DSKH documentation describes all test entry and exit messages and a standard I-O error message. Data errors and disabling errors are detected by the program, and all such messages are contained in the program.

3.3.1 Information Typeouts. The following typeouts are seen in test 6 only:

TURN DEVICE XX OFF AND ON -

NORMAL ATTENTION INTERRUPTS - CDN XXX AND XXX

3.3.2 Error Messages. The following non-standard error messages are seen in the tests numbered in parentheses:

(2,3,4,5,6,7,)	TIO ON CHANNEL XXX STATUS XXX
(5)	UNIT CHECK NOT SET - DEVICE XXX - STATUS XXX
(2, 4, 5)	DEVICE NOT BUSY WHEN EXPECTED - DA XXX
(2, 4, 5)	NO INTERRUPT - DA XXX
(2, 4, 5)	CONTROL UNIT END NOT SET - DS XX
(4)	FORMAT WRITE FAILED - CAW = XXXXXXXXXXXXXXXX
(2, 4, 5)	COMMAND REJECT ON DEVICE XXX
(6)	EXPECTED ATTENTION - GOT STATUS XX
(6)	INTERRUPT - CHANNEL XX DEVICE XX INSTEAD OF XX
(7)	COMPARE ERROR DEVICE XXX READ XX WROTE XX

4. SUPPLEMENTARY DATA

4.1 Supplementary Software Information. Each test of the program is entered separately by DSKH and stands alone. It could be extracted from the rest of the program and either be eliminated or assembled by itself with DSKH.

4.2 Supplementary Hardware Information. See DSKH documentation.